REFUSE CONTAINER LID

We claim:

1. A lid for covering at least a portion of a top opening of a refuse bin; the refuse bin having a top opening and lid mounting means for mounting said lid; said lid comprising:

a rectangular panel including:

an upper side,

a lower side;

a mid-section;

a hinge end including:

connection means for connecting to the lid mounting means such that said panel is rotatable about a hinge axis; and

an opening end opposite said hinge end; said panel defined by a plurality of longitudinal corrugations spanning substantially between said opening end and said hinge end including a bend section at a predetermined lateral cross-section wherein the lower portions of said corrugations have a reduced cross-sectional area such that a longitudinal compressive force on said opening end at failure buckles said panel upward at said bend section.

2. The lid of Claim 1 wherein:

said longitudinal corrugations are longitudinally upwardly-arched.

3. The lid of Claim 1 wherein:

a compression line between said front end and said hinge axis is below the neutral bending axis of said lid substantially over the entire length of said lid.

4. The lid of Claim 1 further including:

one or more additional bend sections.

5. The lid of Claim 1 wherein:
said mid-section of said panel is upwardly laterally arched.

6. A lid for covering at least a portion of a top opening of a refuse bin; the refuse bin having a top opening and lid mounting means for mounting said lid; said lid comprising:
a rectangular panel including:
an upper side,
a lower side;
a mid-section;
a hinge end including:
connection means for connecting to the lid mounting means such that said panel is rotatable about a hinge axis; and
an opening end opposite said hinge end; said panel defined by a plurality of longitudinal corrugations spanning substantially between said opening end and said hinge end such that a longitudinal compressive force on said opening end at failure buckles said panel upward and including a bend section at a predetermined lateral cross-section wherein said corrugations have a reduced resistance to bending such that a longitudinal compressive force on said opening end at failure buckles said panel upward at said bend section.

7. The lid of Claim 6 wherein:
said longitudinal corrugations are longitudinally upwardly-arched.

8. The lid of Claim 6 wherein:
a compression line between said front end and said hinge axis is below the neutral bending axis of said lid substantially over the entire length of said lid.

9. The lid of Claim 6 further including:
one or more additional bend sections.

10. The lid of Claim 6 wherein:
said mid-section of said panel is upwardly laterally arched.

11. A lid for covering at least a portion of a top opening of a refuse bin; the refuse bin having a top opening and lid mounting means for mounting said lid; said lid comprising:
a rectangular panel including:
an upper side,
a lower side;
a hinge end including:
connection means for connecting to the lid mounting means such that said panel is rotatable about a hinge axis; and
an opening end opposite said hinge end defining a compression line between said opening end and said hinge axis; said panel defined by a plurality of longitudinal corrugations approximating a sine wave in lateral cross-section and spanning substantially between said opening end and said hinge end; said opening end and said hinge end disposed such that a compression line therebetween is below the neutral bending axis of said lid over the substantial length of said lid such that a longitudinal compressive force on said opening end, at failure, buckles said panel upward.

12. The lid of Claim 11 wherein:
said longitudinal corrugations are longitudinally upwardly-arched.

13. The lid of Claim 11 wherein:
said mid-section of said panel is upwardly laterally arched.

14. A lid for covering at least a portion of a top opening of a refuse bin; the refuse bin having a top opening and lid mounting means for mounting said lid; said lid comprising:
a rectangular panel including:

an upper side,
a lower side;
a mid-section;
a hinge end including:
connection means for connecting to the lid mounting means such that said panel is rotatable about a hinge axis; and
an opening end opposite said hinge end; said panel defined by a plurality of longitudinal, upwardly-arched corrugations spanning substantially between said opening end and said hinge end such that a longitudinal compressive force on said opening end at failure buckles said panel upward.

15. The lid of Claim 14 wherein:
said mid-section of said panel is upwardly laterally arched.

16. A lid for covering at least a portion of a top opening of a refuse bin; the refuse bin having a top opening and lid mounting means for mounting said lid; said lid comprising:
a rectangular panel including:
an upper side,
a lower side;
a mid-section;
a hinge end including:
connection means for connecting to the lid mounting means such that said panel is rotatable about a hinge axis; and
an opening end opposite said hinge end; wherein said lids are adapted to be nestably stackable and said panel includes:
a plurality of protrusions for maintaining nested, stacked panels in a parallel relationship.

17. The lid of Claim 16 wherein:
said panel is defined by a plurality of longitudinal,

upwardly-arched corrugations spanning substantially between said opening end and said hinge end.

18. A lid for covering at least a portion of a top opening of a refuse bin; the refuse bin having a top opening and lid mounting means for mounting said lid including a hinge rod having an outer bearing surface and having a longitudinal axis; said lid comprising:

a rectangular panel formed from a resilient thermoplastic including:

an upper side,

a lower side;

an opening end: and

a hinge end including:

integral bearings for mounting said panel to the hinge rod for bearing against the hinge rod outer bearing surface such that said panel is rotatable about the longitudinal axis of the hinge rod; wherein the bearing area exceeds 10% of the outer bearing surface of the hinge rod.

19. The lid of claim 18 wherein:

the bearing area exceeds 20% of the outer bearing surface of the hinge rod.

20. The lid of claim 18 wherein:

said panel is designed to yield to an end compressive force by buckling said panel upwardly before the hinge rod fails.